Armed Forces College of Medicine

AFCM

Diseases of male genital sytsem

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Lecture (8)

Diseases of testes and epididymis

INTENDED LEARNING OBJECTIVES (ILOs)

By the end of this lecture the student will be able to:

1.Mention causes of cryptorchidism, its sites and complications.
2.Mention the inflammatory lesions of testes and epididymis.
3.Classify testicular tumours
4.Describe the pathological features of seminoma
5.Describe the pathological features of teratoma, embryonal carcinoma, yolk sac tumour and choriocarcinoma.
6.Determine sex cord stromal tumours and their effects.

Cryptorchidism

Definition

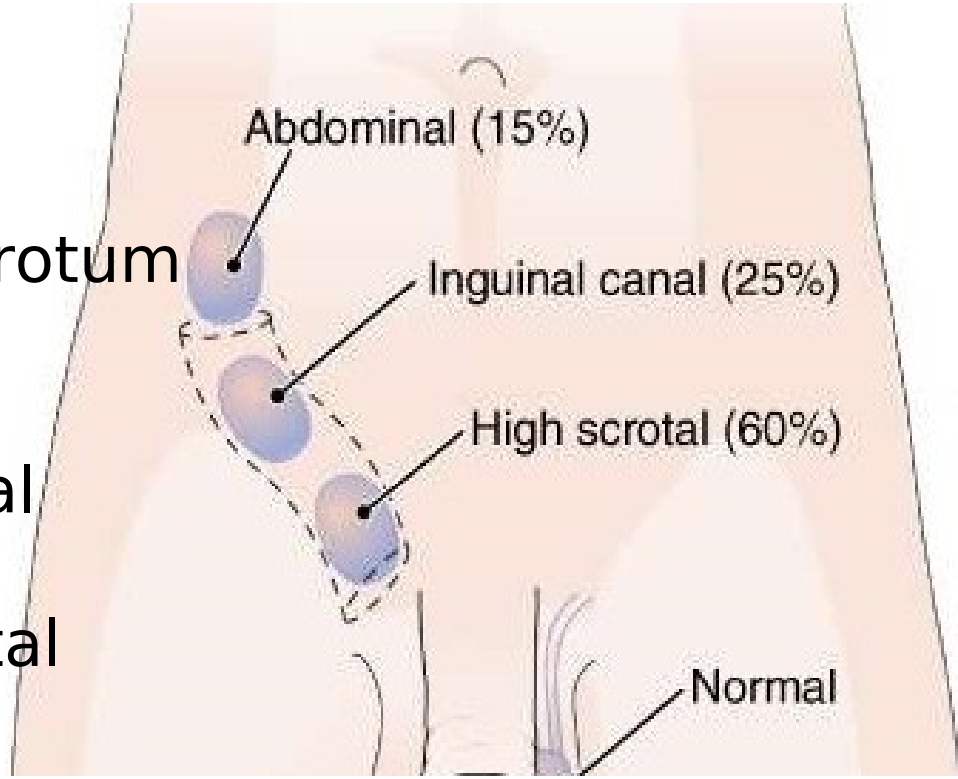
Failure of descent of one or both testes into scrotum

Aetiology

1. Short vas
2. Anomalies of testis, scrotum or inguinal canal

Sites

may exist in abdomen, inguinal canal, prescrotal



Complications

- Testicular atrophy (infertility)
- Increased risk of ***malignant*** testicular tumors (germ cell tumours as seminoma)

Inflammation of Testis and Epididymis

Epididymitis

Presents with fever and gradual onset of scrotal pain.

- **Acute epididymitis**
  affects men age <35 is often caused by *N. gonorrhoeae* or *C. trachomatis*.
- **Acute epididymitis**
  affects men age >35 is often caused by *E. coli* or *Pseudomonas*.
- **Chronic epididymitis**
  can be caused by TB.

Orchitis

- Presents with sudden onset of testicular pain and fever.
- It is frequently viral, particularly due to the mumps virus.

Gonorrhea

Definition:

- Suppurative inflammation of the *anterior urethra*
- Caused by gonococcus.

Mode of infection

- Sexual intercourse with a patient.

Clinical picture

- Greenish yellow discharge from the penis
- Burning during urination

Complications

1.Direct spread of infection

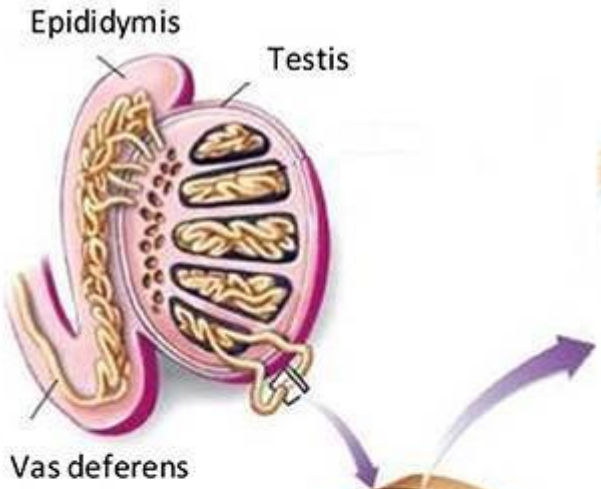
→ To posterior urethra, prostate, seminal vesicles, vas deferens and epididymis infection is difficult to be eradicated and becomes chronic resulting in posterior urethral stricture, sterility and urinary tract obstruction (bilateral hydronephrosis)

→ To bladder and kidney resulting in cystitis and pyelonephritis

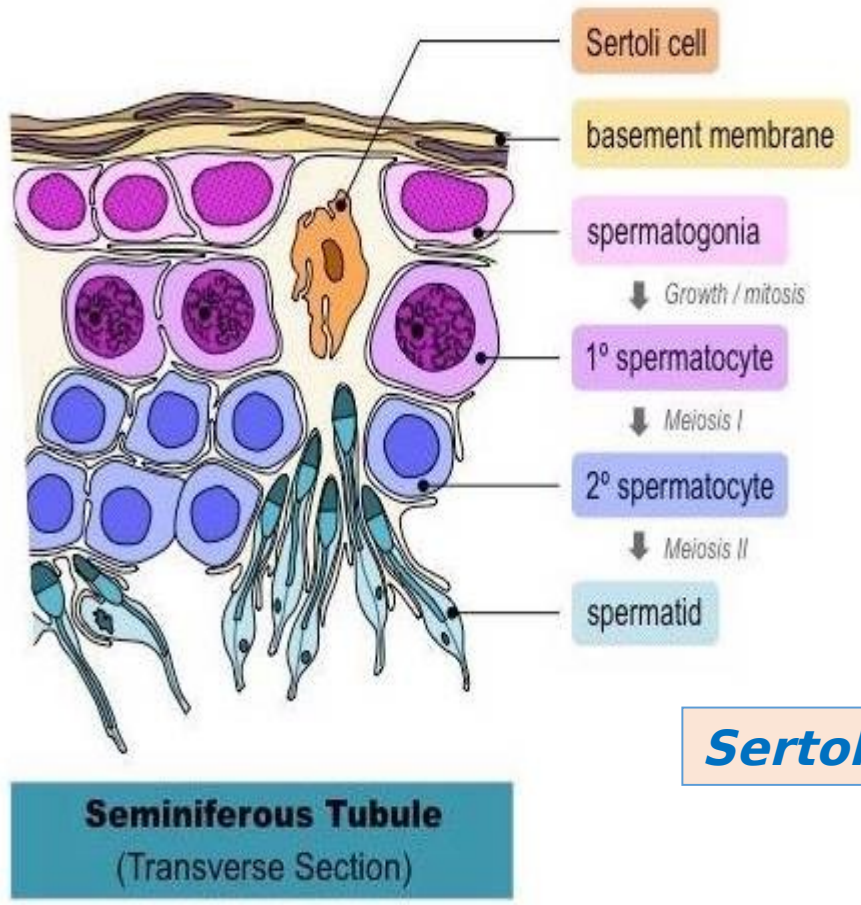
Tumours of testis

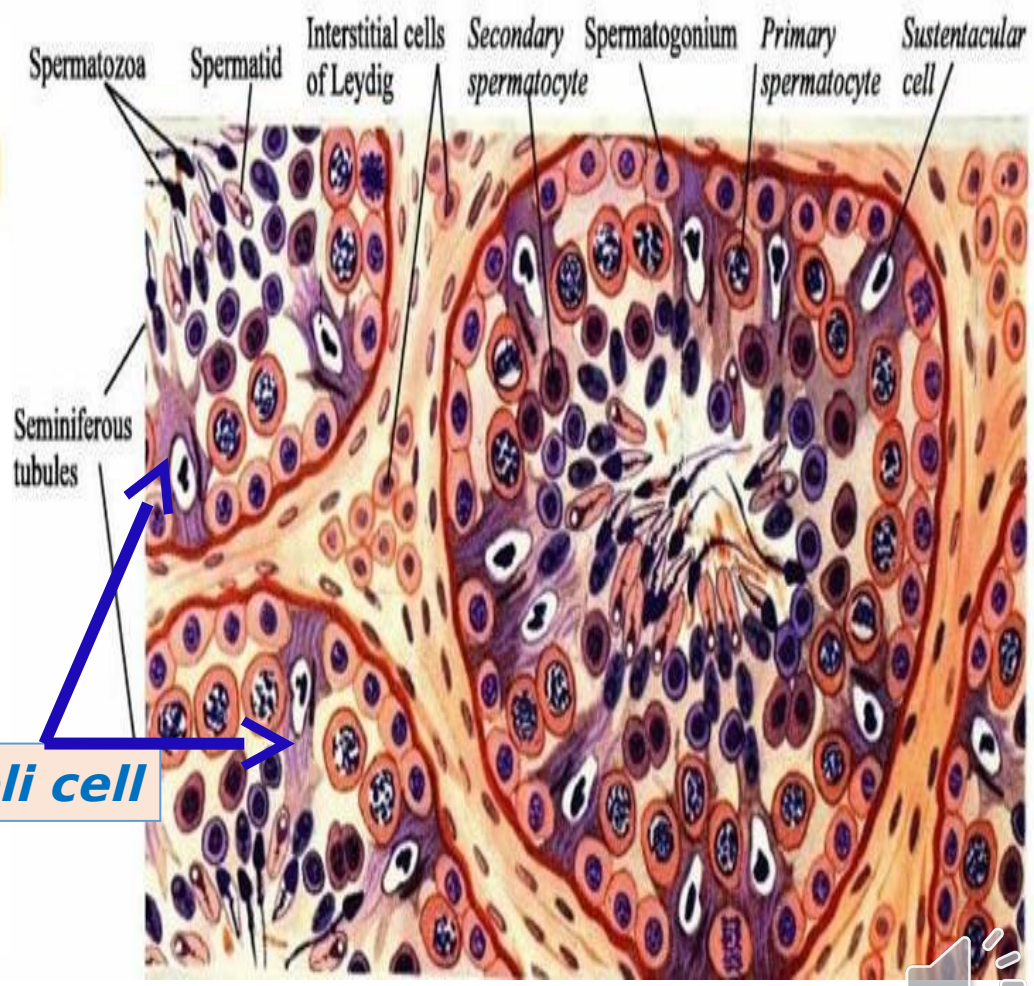
- **Germ cell tumours**
- **Sex cord stromal tumours**
- Mixed Germ cell –Sex cord stromal cell tumours (Gondaoblastoma)
- Lymphoma
- Para-testicular tumours: leiomyoma, lipoma, angioma
- Secondary tumours (metastases)

Testis


Epididymis
Testis
Vas deferens


Seminiferous tubule
(transverse section)


Sertoli cell
basement membrane
spermatogonia
Growth / mitosis
1° spermatocyte
Meiosis I
2° spermatocyte
Meiosis II
spermatid
Seminiferous Tubule
(Transverse Section)


Spermatozoa
Spermatid
Interstitial cells of Leydig
Secondary spermatocyte
Spermatogonium
Primary spermatocyte
Sustentacular cell
Seminiferous tubules
Sertoli cell

Germ cell tumours

Germ cells

Differentiate along

Gonadal lines

Seminoma

Transform into a

totipotential cell population

Non-seminomatous tumors

Totipotential cells

Remain undifferentiated

Embryonal carcinoma

Differentiate along

Extraembryonic lines

1. **Yolk sac tumor**
2. **Choriocarcinoma**

Somatic cell lines

Teratoma

Germ cell tumours

1. Seminoma
2. Embryonal carcinoma
3. Yolk sac tumour (endodermal sinus tumour)
4. Choriocarcinoma
5. Teratoma

Germ cell tumours

N.B

All germ cell tumours

↓

Malignant

Except mature teratoma

occurring

↓

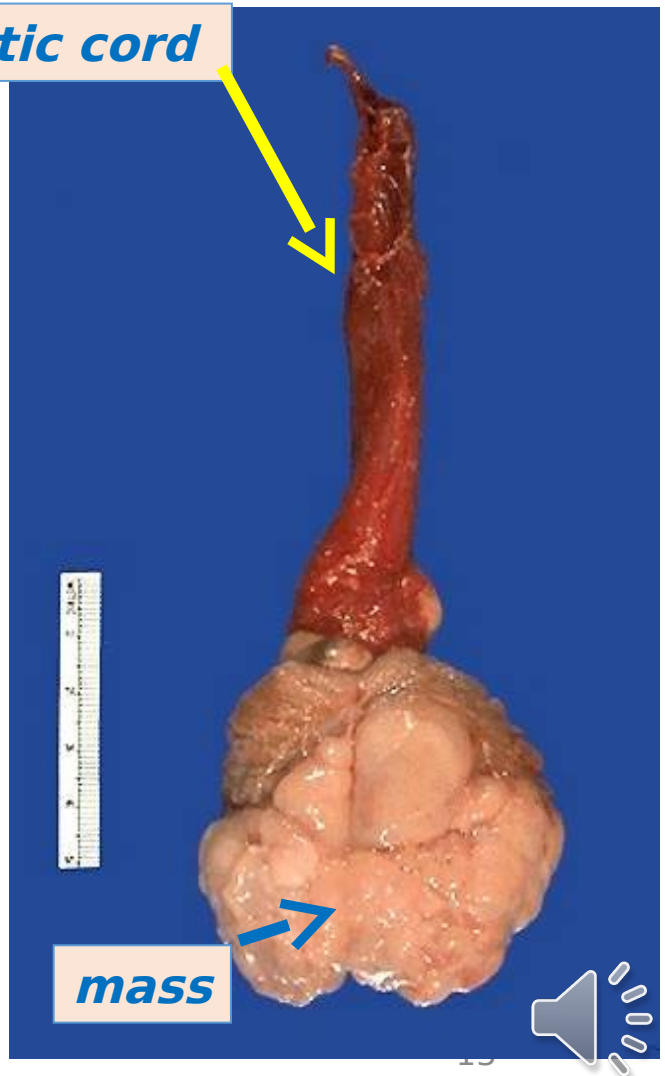
in children

Benign

1-Seminoma

Origin:

- It is a malignant tumor arising from germ cells of the testis.
- It is the **commonest** testicular tumor (40 %)
- It has a **better prognosis** since it is radiosensitive



Gross:

- Testis is moderately enlarged
- Cut section shows a non capsulated solid homogenous mass, sometimes with small necrotic foci

1-Seminoma

Mic:

Types

A.Classic seminoma

B.Spermatocytic seminoma

C.Anaplastic seminoma (seminoma with high mitotic activity)

N.B

- **Spermatocytic seminoma**: occurs in old age (around 65 years)
- **Other types of seminoma** occur around the age of 30-40 years

1-Seminoma

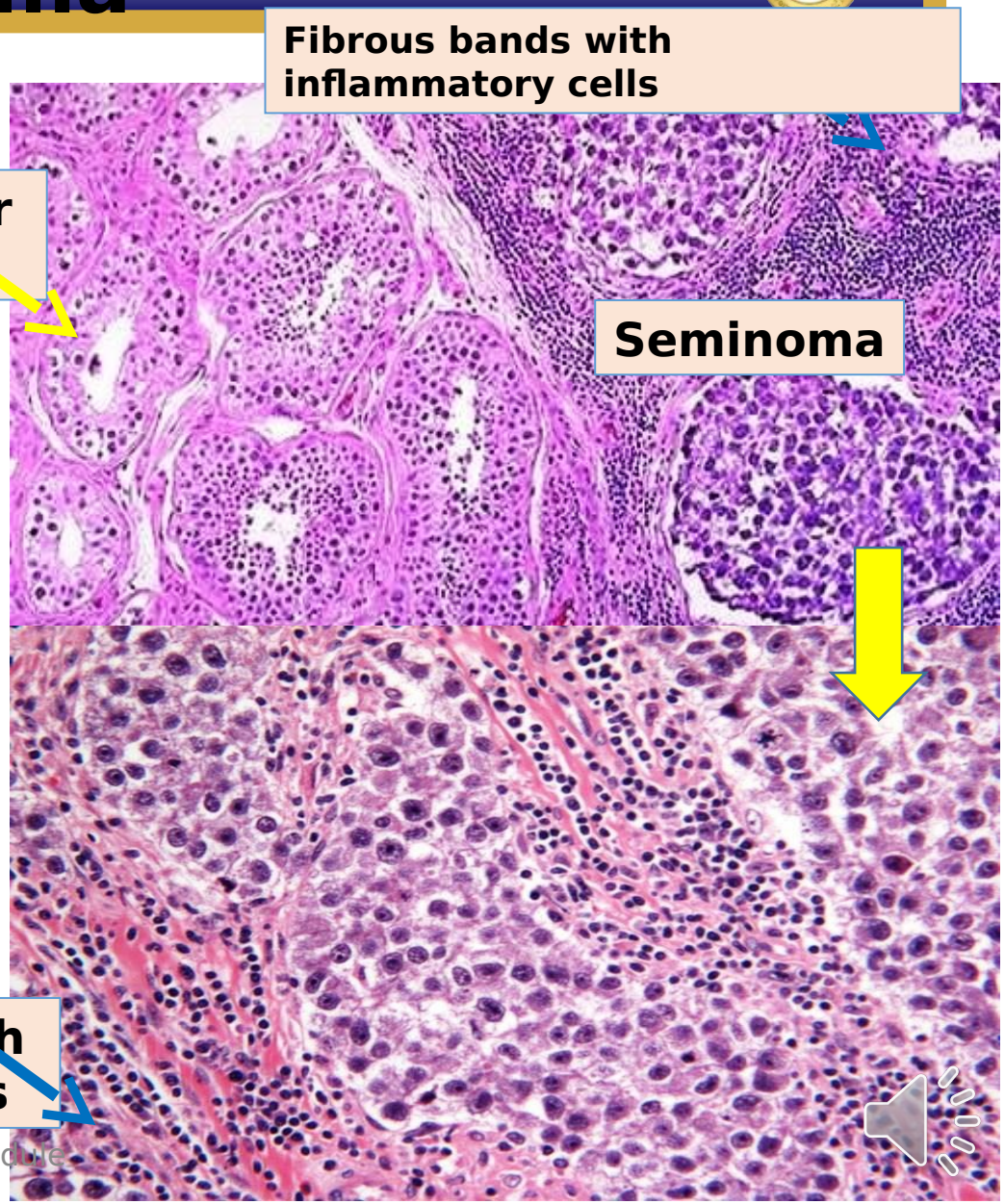
Classic Seminoma

Mic :

- **Groups of large uniform cells**
  - with clear cytoplasm
  - large central nuclei
- Separated by fibrous bands infiltrated by lymphocytes and plasma cells

IHC:

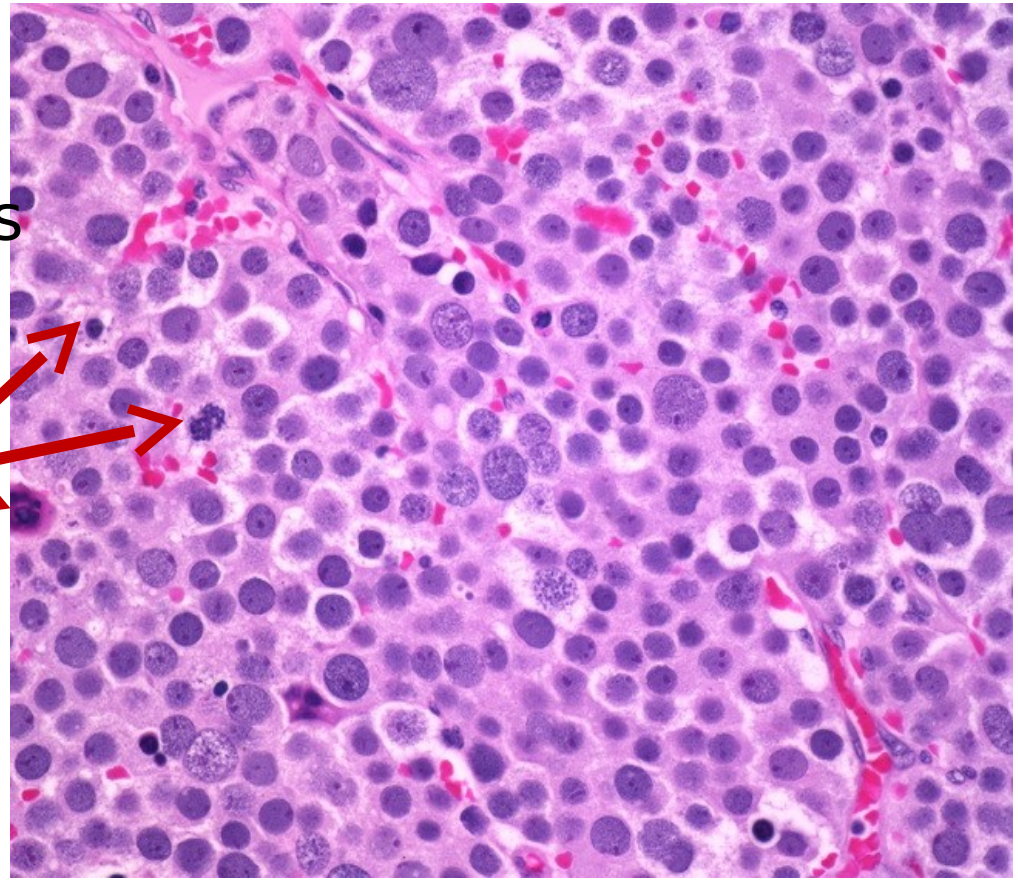
- **Placental alkaline phosphatase: POSITIVE**
- **C-Kit (CD117): POSITIV**



1-Seminoma

Spermatocytic Seminoma

- Mixture of small, large & bizzare giant cells
- Mitosis may be numerous
- Lymphocytic infiltration is absent



Spermatocytic Seminoma

1-Seminoma

Prognosis

Seminomas are radiosensitive tumours

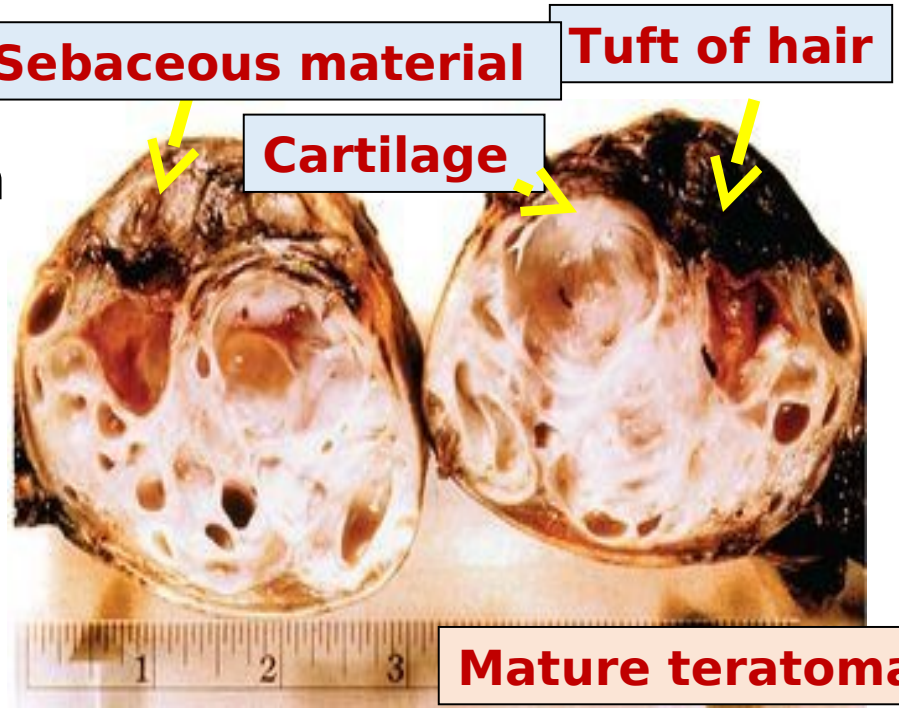
- **Spermatocytic seminoma**
  - Never metastasizes
  - Excellent prognosis
- **Classic seminoma**
  - **Stage I** (limited to testis) or **stage II** (spread to infra-diaphragmatic lymph nodes)
    - Excellent prognosis
    - over 95%of theses patients are cured
  - **Stage III** (lung metastases)
    - Unfavorable prognosis

2-Teratoma

Mature (differentiated) teratoma: ***Benign tumour*** **(may undergo malignant transformatic**

Gross: Rounded tumour with multiple cysts containing Sebaceous material, cartilage , tuft of hair

Mic: A mixture of mature tissues derived from ectoderm endoderm and mesoderm



Immature teratoma: ***Malignant tumour***

Gross: Necrosis and hemorrhage

Mic:

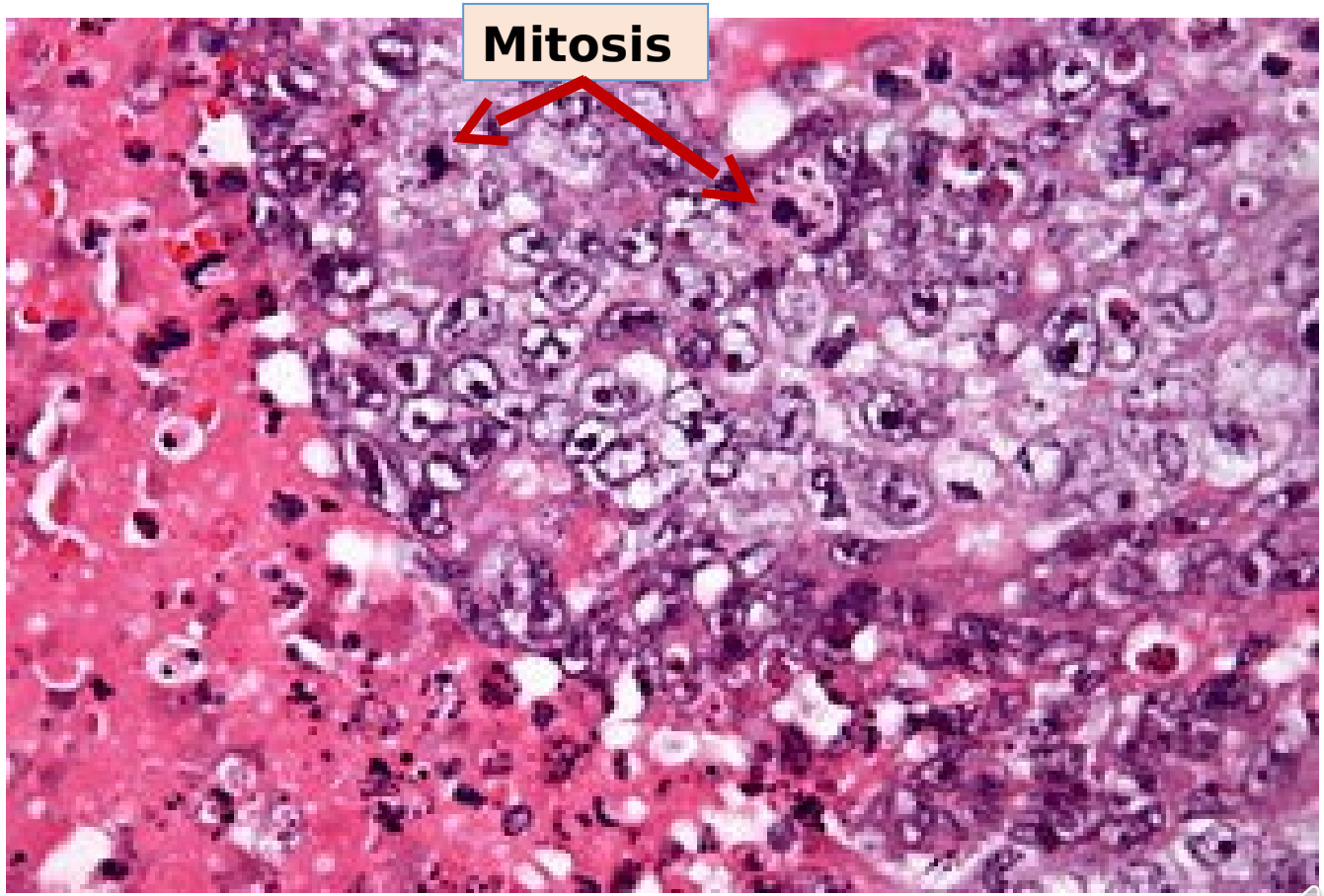
- A mixture of tissues derived from ectoderm, endoderm and mesoderm.
- Some appear immature (malignant) whether epithelial, mesenchymal or both.

Other germ cell tumours

3-Embryonal carcinoma

Very primitive cells with

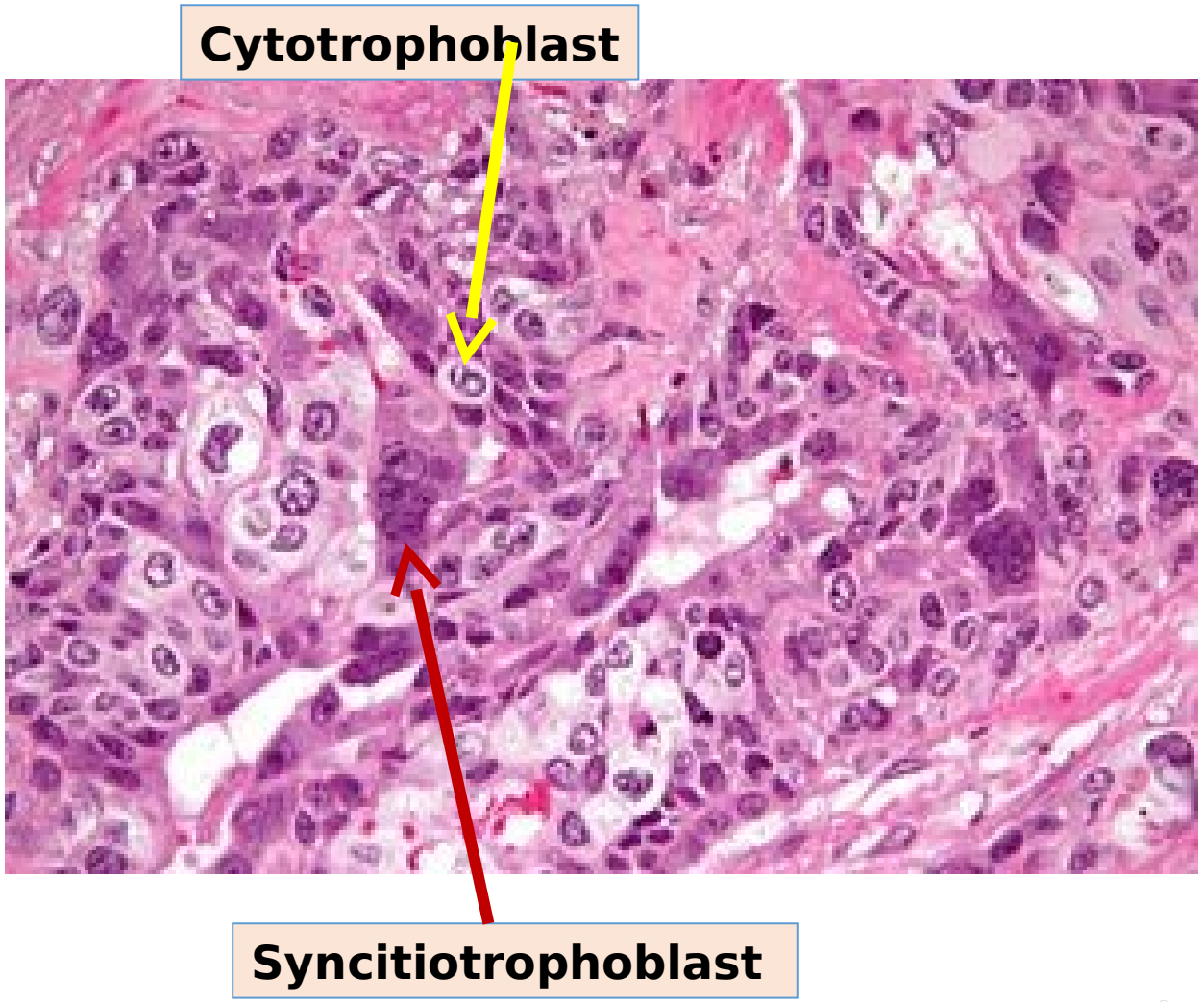
- High anaplasia
- Frequent mitosis
- More aggressive



Other germ cell tumours

4-Choriocarinoma

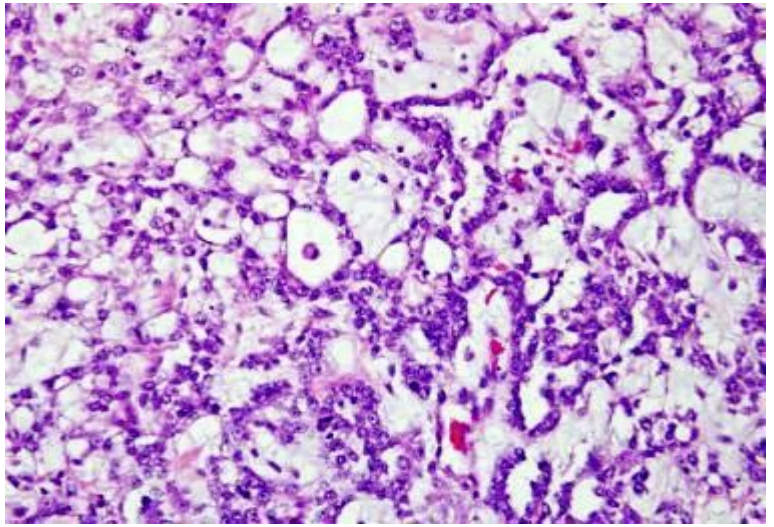
- Highly malignant tumour
- Consists of malignant trophoblastic epithelium (malignant **cyto and syncitio** trophoblast) (placental type tissue)
- Secretes human chorionic gonadotropin **(HCG)**
- Tumour sends **early** metastases



Other germ cell tumours

5-Yolk sac tumour (Endodermal sinus tumour)

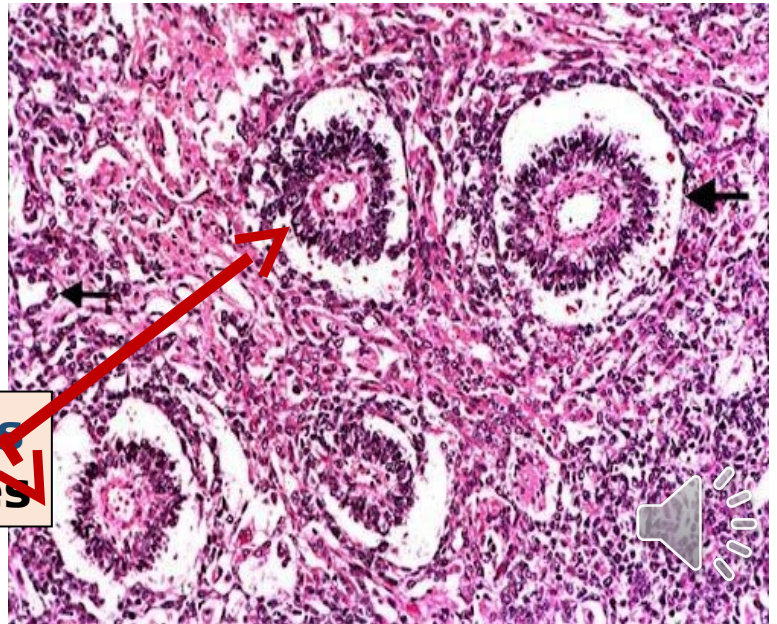
- Mostly occurs in **infants**
- Produce alpha fetoprotein **(AFP)**



Microcystic structures (small cysts)

MIC

- Consists of epithelial cells forming microcysts
- **Schiller- Duval bodies** (structures resemble primitive glomeruli) are characteristic.



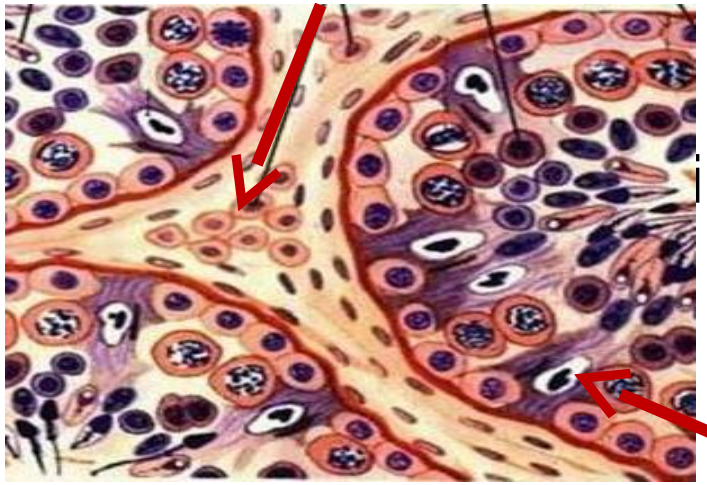
Glomeruloid structures =Schiller –Duval bodies

Sex Cord Stromal tumours

Leydig cell tumour (interstitial cell tumour)

- Rare tumours
- The majority are benign
- The tumour cells can produce **androgens or oestrogens**
  - If producing androgens →in **pre-pubertal boys** → precocious puberty
  - f producing oestrogens → in **young boys** →feminization
    → in **adult males**

Leydig cells



nfertility,
ibution & gonadal atrophy

Sertoli cell tumour

- Present as a testicular mass
- Hormonally silent;
- 10% have malignant course.

Sertoli cells

Quiz

A man has a testicular tumour which is cystic and contains foci of mature cartilage

1. What is the tumour?
2. What is the cell of origin?
3. Mention the tissues from which this tumour arises?
4. Enumerate other testicular tumours which arise from the same type of cells?

SUGGESTED TEXTBOOKS

1. Robbins basic pathology 10th edition, 2018. Chapter 18: Male genital system and lower urinary tract.

2. Kaplan step 1 pathology lecture notes. Chapter 24: Male pathology; 2017 (P.251-256)


Thank
you!